Notes.

THE report of the Advisory Committee on Civil Aviation (Cmd. 770, price 2*d*.), dealing with the question of Government assistance for the development of civil aviation, will be read with interest by those who are concerned in the commercial future of the aeroplane. The report considers at length the present position of civil aviation and the results which have been achieved, and reaches the conclusion that as regards both the progress of commercial flying and the maintenance of a healthy aeronautical industry the indirect assistance given in the past is insufficient. Definite proposals for direct assistance are made. It is suggested that such assistance should be limited to a sum of 250,000*l*. within the two financial years 1920–22, and calculated on a basis of 25 per cent. of the total revenue of the aviation companies concerned, without differentiation as to the nature of the load carried by the machines. "Approved" routes are suggested: (*a*) London to Paris, with extensions; (*b*) London to Brussels, with extensions; and (*c*) a route such as England to Scandinavia, giving opportunities for the development of seaplane and "amphibious" machines. Air-Marshal Sir Hugh M. Trenchard criticises this policy in a minority report. He considers that the Committee is not justified in its assertion that commercial aviation has hitherto been a failure, and expresses the view that there has not yet been sufficient time for the advantages of aerial transport to be appreciated widely and so to create the necessary demand. He further considers the policy of subsidies to be fundamentally unsound, and thinks the money would be better spent in encouraging the design of experimental machines and in helping forward general research on aeronautical questions—a view for which there is much to be said. Assuming the subsidy to be granted, however, Sir Hugh agrees with the mode of application suggested by the majority report.

THERE has just appeared the second interim report of the Water Power Resources Committee, which gives effect to the extended terms of reference it received in October last, viz. to take into consideration the steps necessary to ensure that the water resources of the country are properly conserved and fully and systematically used for all purposes. The Committee recommends that there should be established, by Act of Parliament, a controlling Water Commission, having jurisdiction over England and Wales, upon which should be conferred certain statutory powers and duties relative, *inter alia,* to the compilation of proper records of the water resources and water requirements of the country, the allocation of these resources, the adjustment of existing anomalies and hardships, and the reconciliation of conflicting interests. Such a body would assist Government Departments concerned in the uses and control of water, would advise Parliamentary Committees before which Water or Water Power Bills may be heard, and generally would act as consultants and technical specialists to the Government in regard to questions within their purview. They would also promote and initiate legislation for securing the development of rivers as a whole from source to mouth. The Committee recommends that further powers should be conferred on the Ministry of Health and other Government Departments to make orders authorising uncontested schemes of improvement. As regards its primary investigation, the Committee reports that there are several parts of Great Britain in which exist large sources of water power capable of development, but that it will deal more fully with this section of its inquiry in its final report, as well as with amendments required in the law in regard to pollution, underground water, and kindred subjects.

THE Department of Overseas Trade, in promoting the Empire Timber Exhibition at the Holland Park Skating Rink (July 5 to 17), has aimed at bringing under the notice of the British timber trade the various kinds of timber grown within the Empire. The exhibition will be fully representative of the timber-growing countries of the Empire, and should be of much interest and value.

THE annual meeting of the Somersetshire Archæological and Natural History Society will take place on July 20–22, and an interesting programme has been arranged. On the opening day, at Bridgwater, the new president, Mr. A. H. Thompson, will deliver an address on "Medieval Building Documents, and What We Learn from Them." In the evening of the same day Mr. A. F. Major will read a paper entitled "The Geography of the Lower Parrett in Early Times and the Position of Cruca." On July 21 a lecture will be given by Mr. H. Corder on "Rambles round Bridgwater." In addition, there will be many excursions to places of interest. Further particulars of the meeting can be obtained from Mr. H. St. George Gray, Taunton Castle, Taunton.

THE DUKE OF CONNAUGHT on Thursday last paid a visit to the Royal College of Surgeons of England and received the diploma of an honorary fellow of the college.

THE RIGHT HON. H. A. L. FISHER and Sir James G. Frazer have been elected fellows of the Royal Society, under the statute governing special elections, on the grounds of their having "rendered conspicuous service to the cause of science."

AT the meeting of the Royal Society of Edinburgh on Monday, June 21, the following were elected foreign honorary fellows:—William Wallace Campbell, director of the Lick Observatory; Yves Delage, professor of zoology, Faculty of Sciences, Paris; Hendrik Anton Lorentz, professor of physics, Leyden University; Alfred Gabriel Nathorst, Stockholm; Ch. Emile Picard, perpetual secretary, Academy of Sciences, Paris; Charles Richet, professor of physiology, Faculty of Medicine, Paris; and Georg Ossian Sars, formerly professor of zoology, Christiania, and Director of Norwegian Fisheries.

MEDALS have been awarded to the following by the Council of the Royal Society of Arts for papers read before the society during the past session:—J. W.

Pearson, "The Seed Crushing Industry"; S. Preston, "English Canals and Inland Waterways"; Sir J. Currie, "Industrial Training"; Air-Commodore E. Maitland, "The Commercial Future of Airships"; Sir W. S. Meyer, "The Indian Currency System and its Developments"; A. Howard, "The Improvement of Crop Production in India"; Sir F. Watts, "Tropical Departments of Agriculture, with Special Reference to the West Indies"; and Sir J. Cadman, "The Oil Resources of the British Empire."

THE Riberi prize of the Academy of Medicine of Turin has been awarded to Dr. G. Vanghetti for his researches on amputations and kinematic prostheses.

MAJOR KENELM EDGCUMBE has been elected chairman of the National Illumination Committee of Great Britain in succession to Mr. A. P. Trotter. A meeting of the International Illumination Committee is to be held in Paris next year to discuss technical subjects.

A MONUMENT to Wilbur Wright is to be dedicated on July 18 at Le Mans, France, near which town he carried out many of his aeronautical experiments.

THE annual meeting of the Research Defence Society was held on June 23, when an admirable address was given by Col. McCarrison on "Vitamines in their Relation to Health." Col. McCarrison spoke with authority; he made clear the facts already proved, and the intricacies of the study of vitamines. It is strange now to recall the old teaching about the "constituents" of our food; the proteins and the fats and the starches; the old South Kensington exhibits of an apple or a mutton-chop analysed down to half a dozen phials of chemicals, of water, and of "ash"; but not a word said of these potent and subtle vitamines which "animate the whole" and safeguard us against rickets and scurvy and beri-beri and epidemic dropsy. After the meeting Dr. and Mrs. Mellanby showed specimens of the results which they have obtained in this field of research, especially in the relation of vitamines to the growth of the bones and to the development of the teeth. The society's annual report speaks of increased activity in good educational work. The Jenner Society has become affiliated to the Research Defence Society, and this is a move in the right direction. The Research Defence Society has lately published an address by Sir Walter Fletcher on the work of the Medical Research Council, and is about to publish an essay by Sir David Bruce on tetanus and the use of tetanus antitoxin.

SIR CHARLES TOMES has presented to the museum of the Royal College of Surgeons of England the entire collection of microscopical preparations made by himself and also by his father, the late Sir John Tomes, during their investigations into the structure and comparative anatomy of the teeth. In this important donation are included the preparations—many of great beauty as well as of scientific worth—on which memoirs published in the Philosophical Transactions and Transactions of the Odontological Society were based. The gift thus made is to be known as the Tomes Collection, and will be accessible to all who are making a study of the comparative anatomy and microscopical structure of the teeth of vertebrate animals.

AMONG the worked flints collected from the ploughed fields of Norfolk and Suffolk Miss Nina F. Layard has lately observed several with well-defined finger-grips, which she describes in the latest part of the Proceedings of the Suffolk Institute of Archæology (vol. xvii., part i.). The implements are beautifully illustrated by photographs, showing how they are adapted by chipping for holding in the hand. They include both scrapers and borers, and one seems to be suitable for cutting hides. The age of the implements is undetermined, and Miss Layard compares them with certain scrapers obtained by the late Dr. Sturge from Luxor, Egypt. She also points out that the North Alaskan Eskimos at the present day carve finger-grips in the wooden or bone handles in which they fix their stone scrapers.

THE problem how to make philology interesting has been solved by Sir George Grierson in two papers on the Indo-Aryan vernaculars reprinted from the Bulletin of the School of Oriental Studies. The Aryan languages cover, roughly speaking, the whole of the northern plain of India, penetrating in the case of the Pahári dialects into the lower ranges of the Himalayas, while closely related to them is another group of tongues in the mountainous country lying south of the Hindu-Kush, which are here styled the Dardic or modern Pisácha languages. The most important result of the Philological Survey is that the Indo-Aryan vernaculars fall into three groups: the midland, occupying the centre of the great northern plain; the outer in a band on the west, south, and east; while between these lies the intermediate group representing the former shading into the latter. These groups of tongues are obviously the result of successive invasions or the peaceful introduction of foreign cultures. The pressing problem at present is how to combine the philological with the ethnological evidence, and Sir G. Grierson's papers are a valuable contribution to the solution of it.

MR. W. E. HEITLAND published in the *Journal of Roman Studies* (vol. viii., part i.) an elaborate, fully documented article on the conditions of agriculture in Italy in Imperial times. He specially deals with the question whether Italy furnished a large number of farmer emigrants to raise and maintain provincial agriculture. He finds that the evidence does not favour such an emigration. One of the most pressing anxieties of the Emperors was to maintain a corn supply from Egypt and other African regions. But for the development of this industry native African farmers would be best qualified. Therefore, while we are entitled to assume that the Emperors were anxious to protect their *coloni* from the oppression of dealers with the connivance of corrupt officials, we ought not to base far-reaching theories of State-assisted emigration on the occurrence of a few Italian names in provincial inscriptions, the authors of which may not have been themselves *coloni*.

INFLUENZA was persistent this year in London for seventeen weeks from February 7 to May 29, the deaths from the disease, according to the returns of the Registrar-General, numbering 20 or more each week. For the previous fifteen weeks, from

October 15, 1919, to January 31, the deaths in London had ranged irregularly from 12 to 24. The return for the week ending June 12 gives only 13 deaths in London due to the disease, and in the preceding week the deaths were only 19. For the seventeen weeks ending May 29 the average deaths per week numbered 59, and in ten previous epidemics out of a total of twenty-eight since 1890 this number was exceeded, the highest weekly average being 500 in the epidemic of 1918–19, which lasted thirty-one weeks; the next highest was 171 in the epidemic of 1891, and 162 in 1892. The maximum number of deaths in a single week in the recent epidemic was 131, whilst in that of 1918–19 the number was 2458, the next highest maximum being 506 in 1892 and 473 in 1895. Of the twenty-eight epidemics since 1890 only two have embraced the summer months, those occurring in 1891 and 1918. The age incidence of the last three epidemics has differed widely from all others inasmuch as the active and able-bodied, aged between twenty and forty-five, have suffered most severely, although the attack, which has apparently now abated, was less marked in this respect than the two epidemics of 1918 and 1918–19.

Medical Science: Abstracts and Reviews for June (vol. ii., No. 3) contains among its articles a review of the subject of tuberculosis, particularly in connection with the war. Tuberculosis only slightly increased in France and England during the war, and mainly among young women in industry, whereas, in Belgium, Germany, and Austria, all classes of the community suffered and to a rapidly increasing extent. The principal causative factor for this difference appeared to be that of food.

IN recent years the development of genetics has been marked by the establishing in various countries of a number of new scientific journals dealing with this rapidly growing subject. The latest addition to this list is *Hereditas*, the first number of which we have just received. It is issued by the Mendelian Society of Lund, Sweden, the president of which, Prof. H. Nilsson-Ehle, is well known for his breeding experiments with wheat. The journal will appear three times annually so far as possible, making a volume containing about 350 pages. The contributions are to be published in English, German, or French, and the subscription is 25 Swedish crowns per volume. The first number includes a study of the resistance of wheat to the nematode Heterodera and its inheritance, by Nilsson-Ehle; the hereditary transmission of deaf-mutism, by Lundborg, and of hereditary tremor, by E. Bergman; the rate of pollen-tube growth in Œnothera and its possible effect on inheritance-ratios, by Heribert-Nilsson, as well as studies of colour inheritance in peas and poppies, chlorophyll factors in the onion, and bud-sports in wheat. The new journal, which thus includes in its range the study of human as well as plant and animal material, will be a welcome channel of publication for the growing Scandinavian school of geneticists, and will take its place among the standard journals on this subject.

IN the Reports of the South African Museum for 1918 and 1919 Dr. L. Péringuey records some new facts relating to the Strand-loopers. In a cave-shelter a slab-painting was found above the kitchen-midden material and beneath a stalactitic column. Skulls in the midden were filled with gypsum. The geological conditions indicate that these formations must have taken a long time to produce—a longer lapse than is usually accepted. "If we take into consideration the conclusions of Shrubsall, that Strand-looper skulls differ materially from the Hottentot or so-called Bush races, I am justified, I think," says Dr. Péringuey, "in claiming for the Strand-looper branch of the 'San' that occupied at one time the southern littoral of the former Cape Colony, not only a mode of culture more primitive than that retained by any living human race, but also a greater antiquity than for any other living African race." From the South-West Protectorate was obtained, and is figured in the Report, a rock-graving on which hoofs of animals and reduced representations of human feet had been produced by picking. Such gravings may, perhaps, denote places where the Bush people had found game. These are only a few of many interesting discoveries mentioned in these Reports.

THE Smithsonian Institution has a custom, which we commend to the British Museum, of publishing each year an illustrated account of its explorations and field-work. The report for 1919, just to hand, contains narratives and illustrations that might well stir the enthusiasm of the American public and lead to donations for similar purposes. Where so much is of interest to astronomer, anthropologist, ethnographer, geologist, and zoologist, we should be hard put to it to make a selection did we not find some notes by Mr. C. M. Hoy on the extermination of the Australian native fauna, to which the attention of British naturalists should be directed. "The greatest agent working towards the extermination of the native animals is the fox; next come the cattle and sheep men, who distribute poison by the cartload in the effort to reduce the rabbits. This has also caused or helped to cause the extermination of some of the ground-inhabiting birds. Another great agent is the bush-fires which sweep over the country. These are often lit intentionally in order to clear out the undergrowth and thus increase the grass. . . . The country at Bulliac is a good example of what the cattleman will do in a few years' time in killing off and burning the timber, and the consequent destruction of animal life. . . . The extermination of the native mammals has apparently gone much farther than is generally thought. Many species that were plentiful only a few years ago are now almost, if not altogether, extinct. Diseases have also played a great part in the extermination. The native bear died in thousands from a disease which produced a great bony growth on their heads. A mysterious disease also spread through the ranks of the native cat, *Dasyurus viverrinus*; the domestic cat also played a great part in their extermination. Even adult specimens of Dasyurus were often dragged in by the family cat. . . . There are very few game laws in Australia, and no one gives any attention to the ones that are in order."

THE greater part of a skeleton of the giant extinct marsupial Nototherium has lately been found in Mowbray Swamp, Tasmania. The skull and the limb-bones of the left side are described as well preserved, and are especially important for comparison with the numerous scattered remains of the same animal discovered in the Pleistocene deposits of Australia. The skeleton of Nototherium is less satisfactorily known than that of the allied Diprotodon, of which many specimens were found in Lake Callabonna, South Australia, about twenty-five years ago.

WE have received a copy of vol. v. (1918–19) of the Journal and Proceedings of the Royal Society of Western Australia, from which we learn that this society makes steady progress in membership and in the value and importance of its publications. The papers deal mainly with Western Australian problems. Prof. W. G. Woolnough writes on the physiographic elements of the Swan coastal plain, adding several details that have been overlooked in more general accounts. An important historical paper is one by Mr. J. S. Battye on the early colonisation of Western Australia. Mr. W. A. Saw contributes a paper on town-planning in Australia. His paper is noticeable for a number of well-chosen illustrations showing good and bad planning in various Australian towns.

M. EMILE BELOT, whose artificial volcanoes were recently mentioned in NATURE, vol. civ., p. 575, has published a work on "L'Origine des formes de la Terre et des Planètes" (Paris: Gauthier-Villars, price 14.40 francs). While holding that the earth and the moon developed from a state of luminous vapour of nebular origin, the heat of this vapour not being due to mere contraction, he points out, on the analogy of novæ, that the intensely heated stage may have lasted only a few months, while other successive changes, such as those when rains of chlorides fell upon a warm surface, may have occurred during the first few years of terrestrial evolution. We cannot here quote the figures by which M. Belot argues that the first waters would condense in the primitive atmosphere, owing to its high pressure, at the temperature of 364°; it is sufficient to mention that, on similar numerical reasoning, he shortens the interval between the first rainfall (Antarctic) and the middle of the Carboniferous period to less than ten million years. The tectonics of the crust are discussed with the aid of simple but suggestive diagrams, and the frequent reversal of views now popular will certainly encourage thought.

AMONG the handsome series of Professional Papers issued by the U.S. Geological Survey in these years of turmoil we may note one by Mr. E. de K. Leffingwell (No. 109) on "The Canning River Region, Northern Alaska." Its description and illustrations of soil and vegetation above permanently frozen ground, or above a subsoil consisting almost entirely of ice, are of wide interest in lands in which such conditions once prevailed. The author uses the term "ground ice" for bodies of ice in frozen ground, which involves confusion with what has always been known as ground ice ("anchor ice" is preferred by Mr. Leffingwell) in rivers or in shallow seas. In most of the areas in which underground ice has been recorded, the downward limit of seasonal thawing is less than 7 ft., 3 ft. being the rule. The author shows, however, that this ice is a product of surface-thawing, water penetrating downwards and adding to the frozen masses at the present day. Underground ice will form wherever the mean annual temperature is some 4°–6° C. below freezing point. The author makes a strong case for his view that very large continuous ice-masses, with occasional inclusions of earth, like those of the New Siberian Islands, may arise from the growth year after year of ice-wedges originating from surface-cracks.

ON May 27 Mr. B. S. Gossling read an interesting paper on "The Development of Thermionic Valves for Naval Uses" to the Institution of Electrical Engineers. He gives first a history of the introduction of the thermionic valve into naval radio-telegraphy, laying stress on the use of Langmuir's formulæ for the value of the electron current as a guide to the numerical design of valves. To old-fashioned electricians the formulæ, which are numerous, are very uninviting. The physical dimensions on both sides of the equations appear to be quite different, and the continual introduction of the voltage to the power 1·5 is very puzzling. We think that the time has now come when the definitions of the fundamental quantities should be made more rigorous, and symbols should be used for the various quantities which show their physical dimensions. In the paper the successive stages of the approximations which were adopted in the calculation of the characteristics of valves are recorded. The final result shows that the observed behaviour of a high vacuum valve can to a first rough approximation be accounted for in terms of known physical laws. Many ingenious tests are described. The method adopted, for instance, for estimating the vacuum in a valve while still on the pump is to have a special vacuum tube attached to the apparatus and measure the width of the "cathode dark space." The paper gives a good idea of the immense amount of work done on the valve by physicists and engineers during the war. The variations of the thermionic properties of the valves which were so puzzling and annoying a few years ago have now been brought within bounds, and a rough standard specification for their production is given. Unfortunately, sufficient information to enable rigid life test clauses to be made is not yet available. It is a great step forward, however, that even a rough specification can be given.

BULLETIN No. 2 for 1920 of the Classe des Sciences of the Royal Academy of Belgium contains a communication from Messrs. J. E. Verschaffelt and R. Crombez on the anomalous dispersion of methyl-violet, fuchsine, and paranitrosodimethylaniline. The authors use the method of Soret, which Wood also adopted, which depends on the division of a glass trough with parallel surfaces into two parts by a glass partition extending from one corner to the opposite one. One of the prismatic troughs thus formed is filled with a solution of the material the dispersion of which is to be investigated, and the other with the solvent alone. Owing to the opposing action of the two prisms the dispersion of the solvent is thus eliminated, and the anomalous dispersion of the solute observed directly. By this means the authors have determined the indices of refraction of the materials as follows:—Methyl-violet for wave-length 6712, 2·52; 6497, 2·43; 4455, 1·23; and 4227, 1·45. For fuchsine 6712, 2·21; 6497, 2·41; 6170, 2·63; 5857, 2·78; and 4227, 1·19. For para-nitrosodimethylaniline 6497, 1·74; 6170, 1·78; 5857, 1·81; 5603, 1·85; and 5270, 1·93.

In the course of an article in *Engineering* for June 18 on the Birkenhead shipyard and works of Messrs. Cammell Laird and Co., Ltd., reference is made to the original generating stations which supplied the whole of the power for the works. The original station was equipped entirely with gas engines supplied from a Mond plant, which also supplied gas to the furnaces in the platers' and other shops. The ten gas engines were of varying sizes, and had a total capacity of 2500 kw. This gas station has done good service, but the large number of comparatively small gas-driven units has resulted in a considerable maintenance charge. There has also been difficulty at times during the war in obtaining suitable fuel for the producers. These conditions, combined with a growing demand for power, have resulted in a decision to shut the gas station down altogether, and to transfer all power generation to the new turbine station. The matter is of some interest in view of the controversy on fuel economy, and illustrates the fact that there are points other than mere economy of fuel to be taken into consideration by large power-users.

We are asked to state that the Research Association of British Rubber and Tyre Manufacturers has secured laboratory accommodation in the Chemistry Department of University College, Gower Street, W.C.1.

We regret to learn from an inset announcement in the current issue of the *Scottish Naturalist* that, notwithstanding that all editorial work in connection with the journal is rendered gratuitously, there was a loss on the year's working, which, however, has been generously met, and that in consequence of the continued increasing cost of production there is a possibility of the magazine ceasing to exist. We trust that this contingency will be averted, for our contemporary has performed valuable services to Scottish natural history for the lengthy period of fifty years. A largely increased subscription list would probably save the situation, and the publishers, Messrs. Oliver and Boyd, Edinburgh, will be glad to have the names of all who will help in the way suggested to keep in circulation this useful scientific periodical.

The latest catalogue (No. 188) of Messrs. W. Heffer and Sons, Ltd., Cambridge, gives particulars of upwards of 1900 second-hand books ranging over a number of subjects. There are sections devoted to science and mathematics; folk-lore and mythology; archæology; India; Ceylon; China, Japan, and the Far East; Turkey, etc. The catalogue, which will be sent free upon request, is worthy of perusal.

Our Astronomical Column.

Tempel's Second Periodic Comet.—The only additional information that has come to hand about this comet is that it was of magnitude 11 at the end of May. It should be of magnitude 9 or 10 in July, and therefore visible in moderate instruments. Accurate observations of position are badly needed, as very few were obtained at the last apparition in 1915. The period of this comet (5¼ years) is the shortest known except that of Encke. Observations were secured in 1873, 1878, 1894, 1899, 1904, 1915, and 1920. The following approximate ephemeris is for Greenwich midnight:

	R.A.	S. Decl.	Log r	Log Δ
	h. m. s.	° ′		
July 6 ...	23 14 51	7 17	0·1216	9·6962
14 ...	23 39 41	8 59	0·1216	9·6791
22 ...	0 2 40	11 5	0·1236	9·6685
30 ...	0 22 24	13 27	0·1274	9·6636
Aug. 7 ...	0 38 50	16 1	0·1330	9·6650

Denning's Comet of 1881 and a Meteoric Shower.—The Rev. M. Davidson has recently made some interesting computations of the dates and radiant points of certain comets if they originate meteor showers. Among these, Denning's comet of 1881 indicates a radiant on August 4 at 303° − 10° about 3° N. of α Capricorni. For many years a prominent shower of slow, bright meteors has been visible from this point at the end of July and the early part of August, and it is quite possibly connected with the comet named. It was well seen in 1900 and 1902, as well as in 1908 and 1916. The comet probably returned in 1899, 1907, and 1916, though it escaped observation, and the next return should occur in 1925 if the computed period of about 8¾ years is correct. There are, however, meteors every year from this shower in Capricornus, and it should be specially looked for during the period from July 25 to August 8.

Capture Orbits.—Text-books on astronomy frequently contain a good deal of speculation on the possibility of capture of comets and satellites; we may quote as instances the Leonid meteors, supposed to have been diverted by Uranus from a quasi-parabolic orbit into an ellipse of short period, and the numerous comets of the Jovian family, on which Jupiter is presumed to have exerted a similar influence. In these cases the perturbing planet made the capture, not for itself, but for the sun. Capture of the former sort, in which the planet retains the captured body as a satellite, can apparently take place only with the aid of a resisting medium, in which case we must date the event in remote ages.

Little research of an accurate numerical character has hitherto been carried out on the subject. Prof. L. Becker contributes two papers to *M.N.* (vol. lxxx., No. 6), in which he shows that a star approaching a binary system may in certain cases suffer capture, while one of the original pair may be expelled from the system. He then points out that approaches would be more frequent in the direction of relative motion of the two star-streams, and by analysis of the distribution of the major axes of the orbits of binaries obtains a result in fair conformity with the theory. The research is made more difficult by the fact that there are two possible positions of the plane of a binary orbit. In a few cases (notably in the systems of Sirius and α Centauri) the spectroscope has decided which of these positions is the correct one. There are probably several other systems in which the spectroscope is capable of giving a decision. Observations of this kind are very desirable wherever they are possible